NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATIONS

WETLAND ENHANCEMENT
(acre)
CODE 659

HYDROLOGIC ENHANCEMENT

Evaluate the source(s) of water at the site to determine whether adequate water is available for the planned wetland enhancement.

As economic and practical restraints allow, develop additional water sources as needed to support the wetland type(s) to be established and the wetland functions(s) to be enhanced.

Where sites have a shallow water area with a designed water level, such as those with levees and control structures, approximately 30% of the area should be considered for topographic enhancement. Consider concentrating features in and near the shallow water reaches. Also mounds and ridges should vary in elevation from above to below the expected normal waterline. Approximately one-third of the mounds should be six inches to one foot below the normal water elevation, one-third should be six inches to one foot above, and one-third should be at the normal water level.

Where sites have a shallow water area without a designed water level, approximately 50% of the area should be considered for topographic enhancement. The designed basins may provide the only standing water on the restoration site. Consider concentrating the deeper features in the lower elevations of the site and shallower features in the higher elevations.

Ditches of varying depths and widths can connect basins to diversify a site. Connection ditches should have side slopes of 3 horizontal to 1 vertical or flatter. Although this adds cover and escape routes for some wildlife species, connecting ditches also may provide access for predatory fish. This is an important factor if an objective for the site is amphibian habitat.

An efficient means of providing additional adjacent habitat is through the creation of linear habitat mounds (ridges). The excavated material from basins can be used to form a low ridge on the down slope side of the basin(s). By using the spoil in a creative manner, the total shallow water on a site can be substantially increased. The impounded sheet water provides seasonal water for shallow feeders such as shorebirds while the excavated basins provide long, hydroperiod, wetland habitats.

Borrow areas for dikes, embankments, and mounds can be incorporated into the development of topographic features. Basins can serve as borrow areas for needed fill. All side slopes of excavated basins should be 6 horizontal to 1 vertical or flatter. Note that, when feasible, slopes should be as flat as possible. Slopes exceeding 20:1 are not considered excessive for habitat purposes. Make all topographic features with rough surfaces on all side slopes and top, an undulating bottom, and a ragged shoreline.

See References section for certain standards and specifications, job sheets, technical notes, and other references for more details on hydrologic enhancement of wetlands.

VEGETATIVE ENHANCEMENT

Where possible, native plant materials should be used; however, introduced or cultivated plant species can be used to meet specific project objectives. Introduced species may become

invasive or detrimental, and caution must be exercised with their use.

When using native species, give preference to native wetland plants with localized genetic material. Plant materials collected or grown from material collected within a 200-mile radius from the site is considered local.

In soils where seed banks realistically exist or where natural colonization of targeted species will dominate within five years, natural regeneration can be allowed. Specific guidelines that consider soils, seed source, and species will be developed for each site.

Include adequate substrate material and site preparation necessary for proper establishment of the selected plant species in the design.

Succession of wetlands is a natural process that can result in significant habitat changes over time. The invasion of a site by woody vegetation and canopy closure are examples of vegetative succession. These and other changes alter species composition and use over time. Early successional species will be lost lowering diversity and can only be restored by periodically reversing succession. Plans to periodically set back succession in some portion of the project area are important to consider.

If the site was predominantly herbaceous vegetation prior to modification and planting is necessary, plant a minimum of two species adapted to the site. Use soils and site information to determine plants to use. Planting rates and species will be based on recommendations from NRCS or Arkansas Game and Fish Commission biologist.

Forested wetland plantings will include a minimum of three species adapted to the site. Where appropriate, two of the species will be hard mast-producing species. Tree planting will meet the criteria in "Tree /Shrub Establishment (Practice Code 612)."

NRCS, AR
July, 2002

The use of woody debris may provide sunning and loafing sites for a variety of wildlife species. It provides additional vertical and horizontal habitat and a substrate for invertebrates. It also is a source of organic matter. Depending on water velocities, the woody debris may need to be partially buried, if used.

REFERENCES

1. "Dike," Conservation Practice Standard and Specifications Code 536, NRCS, Arkansas, April 2002.
2. "Structure for Water Control," Conservation Practice Standard and Specifications Code 587, NRCS, Arkansas, June 2002.
3. In Ecological Sciences Reference Guide – Volume 1, NRCS, Arkansas:
   - "Bottomland Hardwood Guidebook: The Decision-Making Process, Design, Management and Monitoring of GTR's.
   - "Creation of Micro-Topography on Altered Cropland"
   - " Management of Moist Soil Systems"
   - "Shallow Water Habitat Management"
   - "Specifications Guide for Idling and Flooding of Harvested Rice Fields for Rails and Other Wading Birds"
   - "Specifications Guide for Seasonally-Flooded Wetlands on Harvested Cropland and Idle Fields for Waterfowl"
   - "Specifications Guide for Summer and Fall Flooded Cropland, Idle Fields, and Idle Ponds for Shorebirds"
4. "Tree/Shrub Establishment," Conservation Practice Standard and Specifications Code 612, NRCS, Arkansas, June 2002.
5. "Wetland Enhancement," Conservation Practice Standard and Specifications Code 659, NRCS, Louisiana, July 2001.
6. "Wetland Enhancement," Conservation Practice Standard and Specifications Code 659, NRCS, Missouri, February 2000.